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Examination of state-level labor turnover survey data

From 1954–1981, the Labor Turnover Survey (LTS) provided labor demand-related data at the state level. For this article, LTS time series data were compared and states were chosen based on the length of their LTS series, continuity of series, and the geographic representation. Florida, Michigan, New York, Oregon, and Virginia were selected, and the data analyzed both from the business cycle perspective and for specific economic events in those states. The discussion includes LTS methodology and definitions of the data elements produced by the U.S. Bureau of Labor Statistics and the states. The article also discusses the differences in definitions and methodology between the LTS and the current Job Openings and Labor Turnover Survey program.

The current Job Openings and Labor Turnover Survey (JOLTS) program began in 1998, with data publication beginning in 2002 with the December 2000 data. However, a similar program called the Labor Turnover Survey (LTS) existed from 1930 to 1981. The earlier LTS provided data at the state level beginning in 1957. The JOLTS program frequently receives requests for historical data. The LTS data were collected at the state and state Metropolitan Statistical Area (MSA) levels for varying lengths of time.

Background

The LTS program was started by the Metropolitan Life Insurance Company in 1926 “to provide personnel managers with a national benchmark of turnover rates in manufacturing plants.”¹ The survey was turned over to the U.S. Bureau of Labor Statistics (BLS) in 1929. BLS began collecting monthly national-level LTS data in 1930. Concurrently, a number of State Employment Security Agencies (SESAs) were also collecting labor turnover data.

In 1954, the state of Connecticut entered into a cooperative agreement with BLS to jointly collect state-level LTS data. By 1964, the cooperative program covered all 50 states, the District of Columbia, and many MSAs.²

From August 1957 through November 1981, state-level accession rates and separation rates were published in the BLS *Employment and Earnings*. (*Accessions* are defined as the total number of permanent and temporary additions to the employment roll, including both new and rehired employees, and *separations* as terminations of employment during the calendar month.) The data elements initially published included total accession rates and separation rates encompassing quit, discharge, layoff, and miscellaneous other separation rates, such as military.³ By the time the LTS was discontinued in 1981, accession rates were produced with the two subcomponents of new hire and recall rates, while separation rates included quit and layoff rates. The LTS also produced job opening rates from 1969–1973. Data collection for the LTS program was discontinued in 1981 because of budget reductions.⁴

Applications of state data

Historical labor turnover statistics were used for labor market analysis and research. The National Bureau of Economic Research (NBER) regarded the layoff, accession, and quit rates as leading economic indicators. Layoff rates and accession rates were included in the list of economic indicators for 22 years from 1959 until both series were discontinued in December 1981. Layoff rates were included in the composite indexes from 1976 through 1981. Quit rates were included in the list of

economic indicators from 1976 until it was discontinued in December 1981. Additionally, the NBER considered the job vacancies series a coincident indicator (called roughly coincident). The job vacancy rate was included in the list of economic indicators from April 1971 until they were discontinued in May 1974. The NBER lists of leading, coincident, and lagging indicators were published first in the *Business Cycle Developments* monthly report from 1959 through October 1968 and then in the *Business Conditions Digest* from November 1968 through the beginning of 1990.⁵

SESAs used accession rates to compare the number of employees placed through the agency with total number of hires reported by employers by area. This comparison allowed the SESAs to gauge their effectiveness and “measure the number of job placements by local office relative to the potential for placement in the local job market.”⁶ Employers used quit rates to compare against plant performance, e.g., low quit rates indicated efficient operations and effective labor management relations within a plant.⁷

Survey description

The LTS collected data from sampled establishments in the manufacturing, mining, and telephone communication sectors.⁸ States collected data via the form DL-1219, Monthly Report on Labor Turnover. The process used was referred to as a shuttle procedure in which the state collection agency returned the form to the respondent each month so that the next month’s data could be entered. Accessions and separations by type for the calendar month were entered on the form as well as the total employment during the pay period that included the 12th of the month.⁹

The LTS determined the principal product or activity for an establishment by annual sales volume. Establishments were then classified by industry on the basis of the Standard Industrial Classification (SIC) system. Labor turnover data were stratified by industry only, and sample design utilized sampling proportionate to average size of establishment. Labor turnover statistics at the basic cell level were computed by dividing the number of a particular action (e.g., quits) in reporting establishments by the total employment in those firms. The result was multiplied by 100. The data were then aggregated to the industry level by calculating the average, weighted by employment, of the rates for the component cells.¹⁰

Definitions

The LTS defined labor turnover as the “gross movement of wage and salary workers into and out of employed status with respect to individual establishments.” The LTS defined accessions as “the total number of permanent and temporary additions to the employment roll, including both new and rehired employees.”¹¹ Accessions included the following:

- New hires—temporary or permanent additions to the employment roll of persons who had never before been employed in the establishment (except employees transferring from another establishment of the same company) or of former employees not recalled by the employer
- Other accessions—all additions to the employment roll that are not classified as new hires, including transfers from another establishment of the company. Other accessions were not published separately but were included in total accessions.
- Separations were defined as terminations of employment during the calendar month and were classified according to cause:
 - Quits—terminations of employment initiated by employees, failure to report after being hired, and unauthorized absences if on the last day of the month the person had been absent more than 7 calendar days

- Layoffs—suspensions without pay lasting or expected to last more than 7 consecutive calendar days, initiated by the employer without prejudice to the worker
- Other separations—terminations of employment because of discharge, permanent disability, death, retirement, transfers to another establishment of the company, and entrance into the Armed Forces for a period expected to last more than 30 consecutive days. Other separations were not published separately but were included in total separations.

Analysis

Data produced by the LTS were examined for Florida, Michigan, New York, Oregon, and Virginia. These states were chosen based on the length of their LTS series, continuity of series, and the geographic representation.

Note that the use of LTS data has some limitations. Individual states prepared and benchmarked their own data and had differing industrial and geographic stratification methods that may affect state-to-state comparisons.¹² Also, in some cases, data points are missing. In order to have a complete series, missing data points were estimated by using the preliminary data values where available. The state LTS data are available on a not seasonally adjusted basis only. Seasonal adjustment of the series was performed to remove the seasonal fluctuations in the data and examine the underlying trend. Current Employment Statistics (CES) state manufacturing data were also not seasonally adjusted during this period. For this article, the CES state data used in this analysis were seasonally adjusted. Finally, because of the length of the time series, methodological changes occurred throughout the survey. For example, in January 1959, the LTS began including transfers from another establishment of the company as separations and accessions.¹³ Data prior to this time did not.

The U.S. economy experienced overall growth during the postwar years from 1946 through the 1960s. The four recessions that occurred during this period were relatively short and mild and were affected by decreases in the money supply, fluctuating government spending, and a 1959 steel strike. The last of these recessions from April 1960 to February 1961 was followed by a long period of economic expansion. Another mild recession occurred from December 1969 through November 1970 because the Federal Reserve reduced the money supply. That recession was followed by a deeper recession that lasted from November 1973 through March 1975. This later recession correlated with increased oil prices caused by the Organization of Petroleum Exporting Countries (OPEC) oil embargo beginning in October 1973, resulting in lower real income and increased production costs. A short 6-month recession occurred from January 1980 to July 1980, again due to increasing oil prices because of the Iranian revolution. The deepest recession during this timeframe then occurred from July 1981 through November 1982 and resulted from a decrease in money supply by the Federal Reserve.¹⁴ The LTS program was discontinued in November 1981, but those states with available data through that point show the initial effects of that recession on labor demand.

The time series for Florida, Oregon, and Virginia encompass expansions and contractions for the four recessions from April 1960 to July 1980. New York also covers this period in addition to the earlier recession that began in August 1957 and ended April 1958. The time series for Michigan covers three recessions from December 1969 through July 1980.

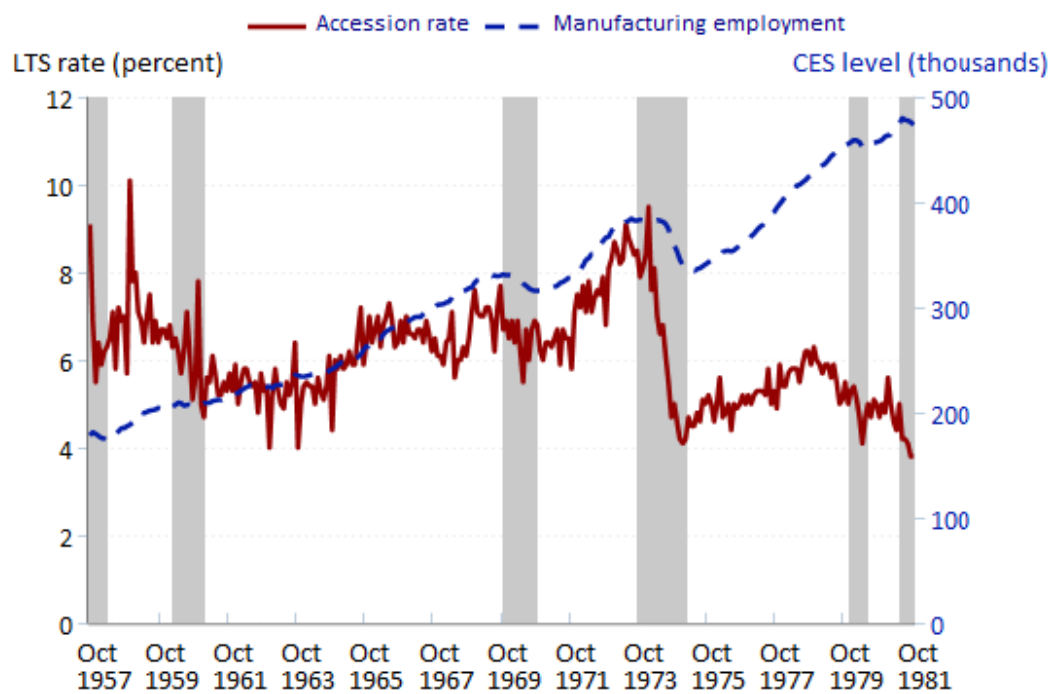
LTS data by state

Florida. Florida LTS data were examined from October 1957 through November 1981. During the post-World War II (WWII) era, the population of Florida steadily increased. In addition to the milder climate, the presence of multiple military bases after WWII, the space program, tourism, agriculture,

and industrialization encouraged migrations to the state. Airport and highway construction provided a transportation system.¹⁵ The percentage of manufacturing to total nonagricultural employment compared with the rest of the United States was low. In 1960, 31 percent of total nonagricultural employment for the United States was manufacturing employment. This level decreased to 27 percent in 1970 and 22 percent in 1980. In Florida, manufacturing employment comprised 16 percent of total nonagricultural employment in 1960, 15 percent in 1970, and 13 percent in 1980.¹⁶

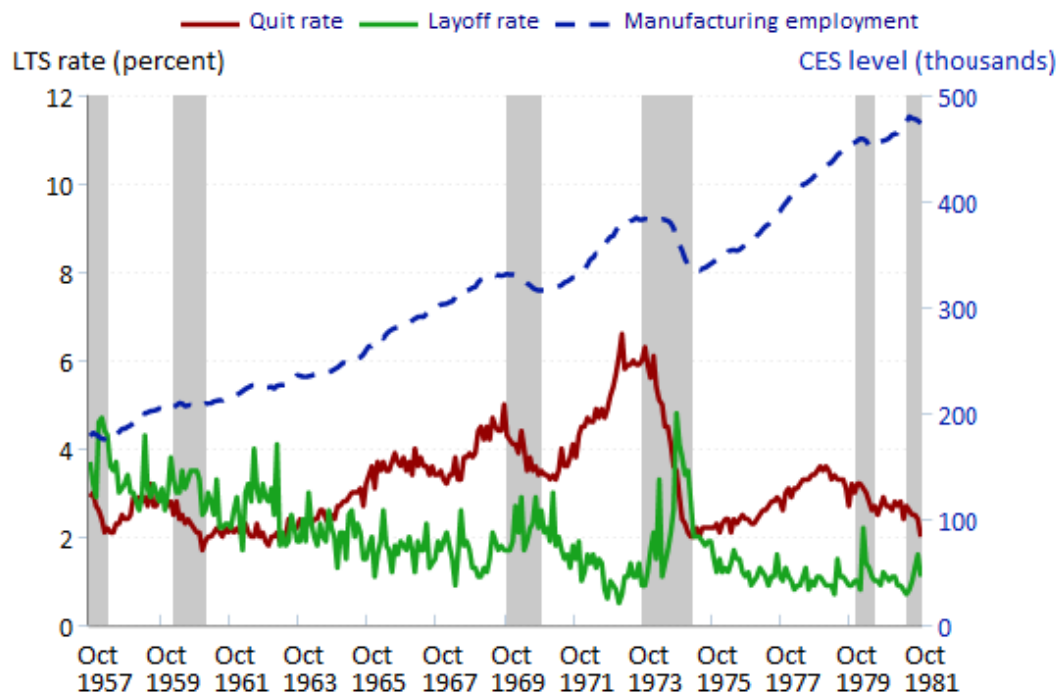
Overall, the level of manufacturing employment trended upward over this series timeframe. Accession rates declined prior to the April 1960 to February 1961 recession. Accession rates trended upward over the following expansion and again began to decline prior to the start of the December 1969 recession. For most of 1973 and the first several months of 1974, the accession rate remained around 8.0 percent or above. The accession rate declined steeply following the onset of the November 1973 recession. During each expansion throughout the LTS series for Florida, the quit rate trended upward. Prior to each recession however, the quit rate declined. The quit rate reached the highest point in March 1973 at 6.6 percent prior to the recession that began in November 1973. Alternatively, the layoff rate trended downward during expansions and upward prior to the onset of recessions. The layoff rate was lowest in February 1973 at 0.5 percent and peaked at 4.8 in October 1974. Accession rates and separation rates declined during the 1973–1975 recession and did not recover previous levels before the recessions of the early 1980s and the end of the available data series. (See figures 1–3 on Florida accession, quit and layoff, and separation rates, respectively.)

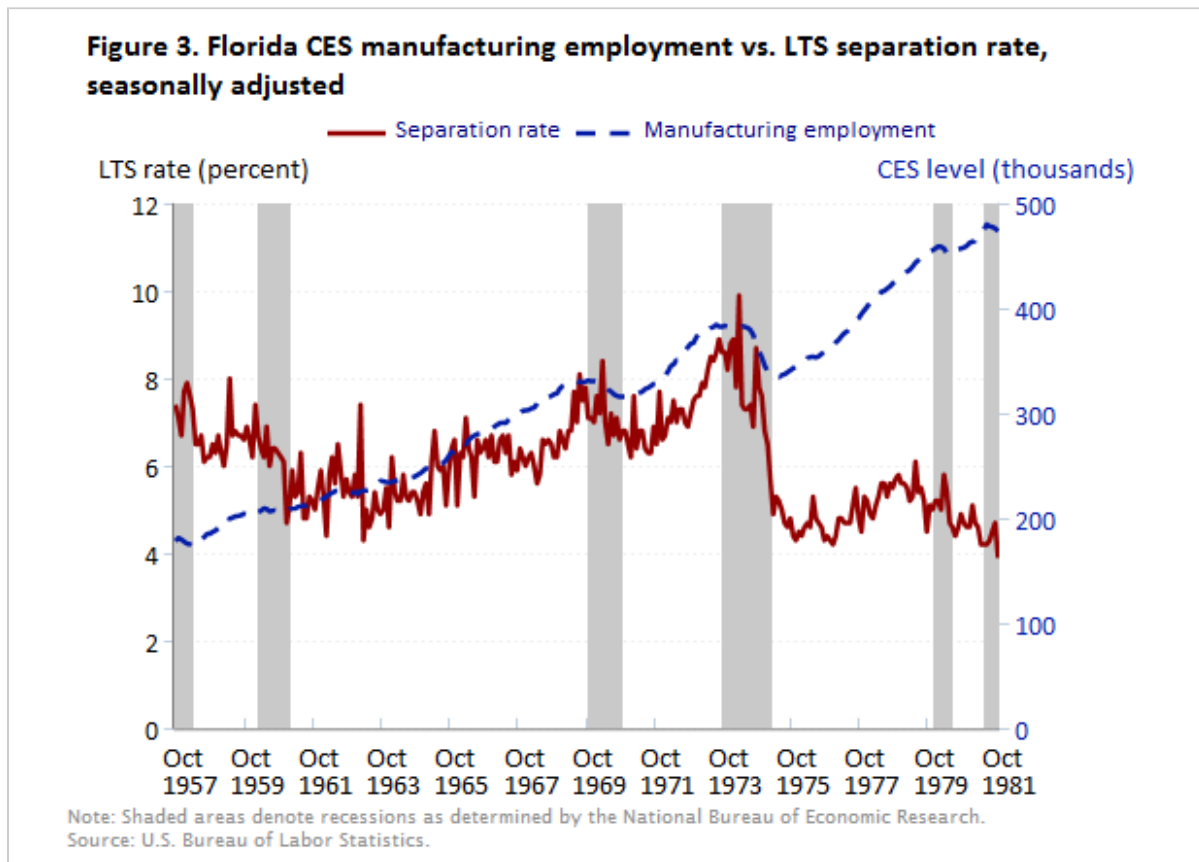
Figure 1. Florida CES manufacturing employment vs. LTS accession rate, seasonally adjusted



Note: Shaded areas denote recessions as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

Figure 2. Florida CES manufacturing employment vs. LTS quit and layoff rates, seasonally adjusted

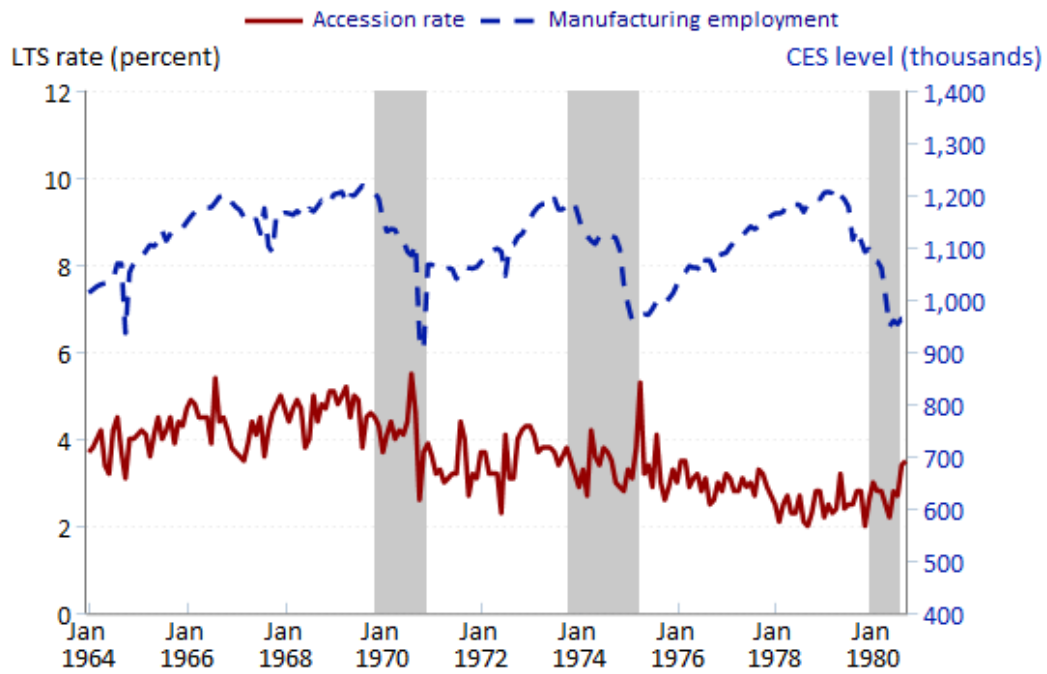




Michigan. The time series analyzed for Michigan begins with January 1964 and ends with September 1980. Prior to the 1960s, Michigan increased production to meet industrial demand during WWII. After WWII, industrial expansion continued. In 1960, 42 percent of total nonagricultural employment was manufacturing employment. In 1970, that percentage dropped to 36 percent. By 1980, manufacturing employment dropped to 29 percent of total employment.¹⁷ Manufacturers faced increasing foreign competition, which resulted in large numbers of layoffs. The 1973 OPEC oil embargo severely affected Michigan's automobile manufacturing-dependent economy in the 1970s.¹⁸

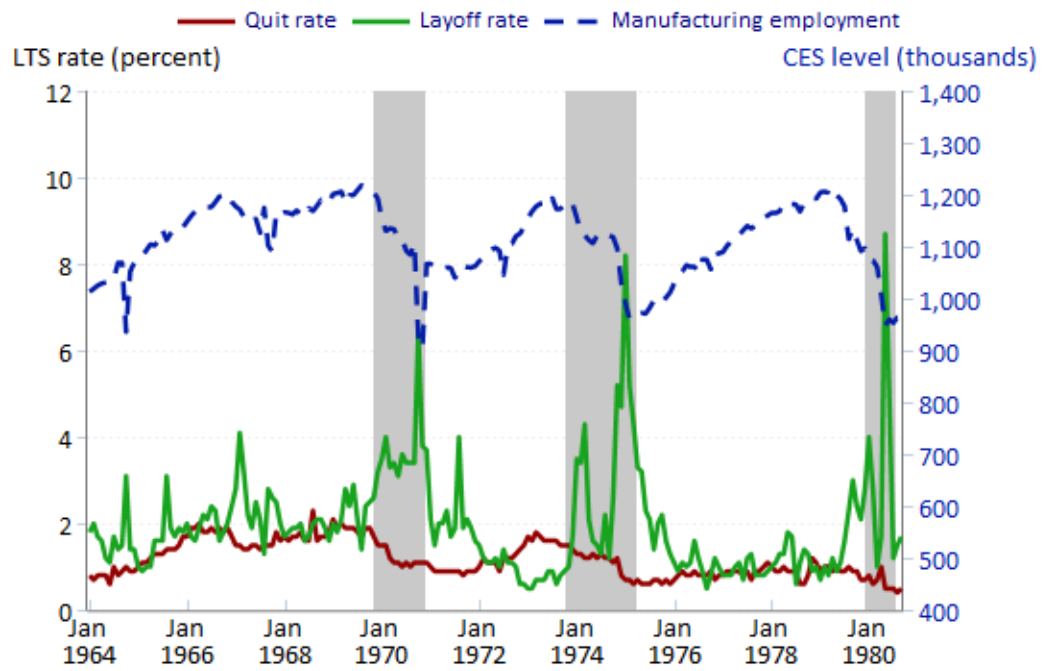
During this timeframe, monthly employment levels periodically increased and decreased. Accession rates trended slightly upward going into 1969. Prior to the December 1969 recession, the accession rate began to trend downward. The accession rate briefly surged near the end of the recession in August 1970 at 5.5 percent but then continued to decline. After the recession, accession rates increased slightly during the subsequent expansion and then declined again prior to the onset of the November 1973 recession. The quit rate was relatively stable throughout the time series, increasing slightly during expansions and decreasing slightly during contractions. The average quit rate for the series was 1.2 percent. The layoff rate, on the other hand, fluctuated greatly; large late-recession spikes occurred for all three recessions covered by the Michigan data. The separation rate fluctuated during the available time series but spiked considerably in January 1975, while employment declined during the November 1973 to March 1975 recession. (See figures 4–6 on Michigan accession, quit and layoff, and separation rates, respectively.)

Figure 4. Michigan CES manufacturing employment vs. LTS accession rate, seasonally adjusted

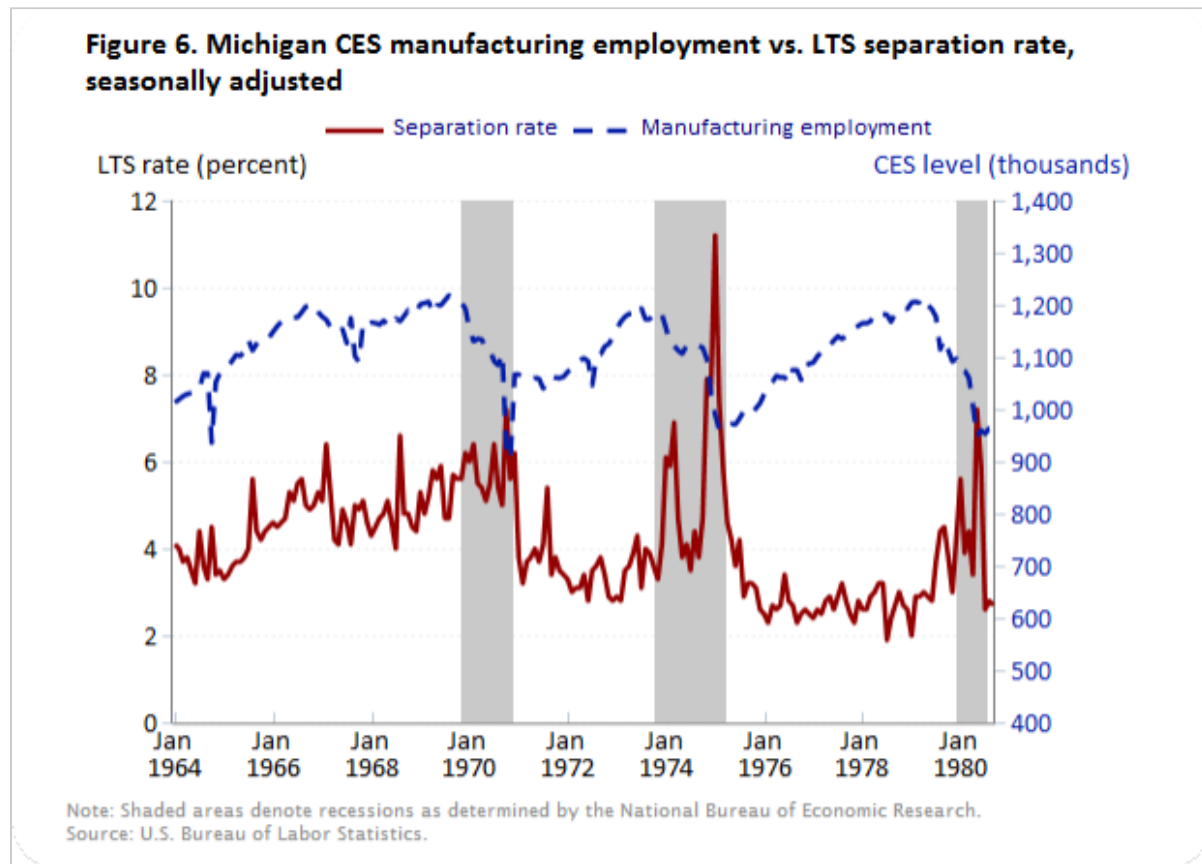


Note: Shaded areas denote recessions as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

Figure 5. Michigan CES manufacturing employment vs. LTS quit and layoff rates, seasonally adjusted



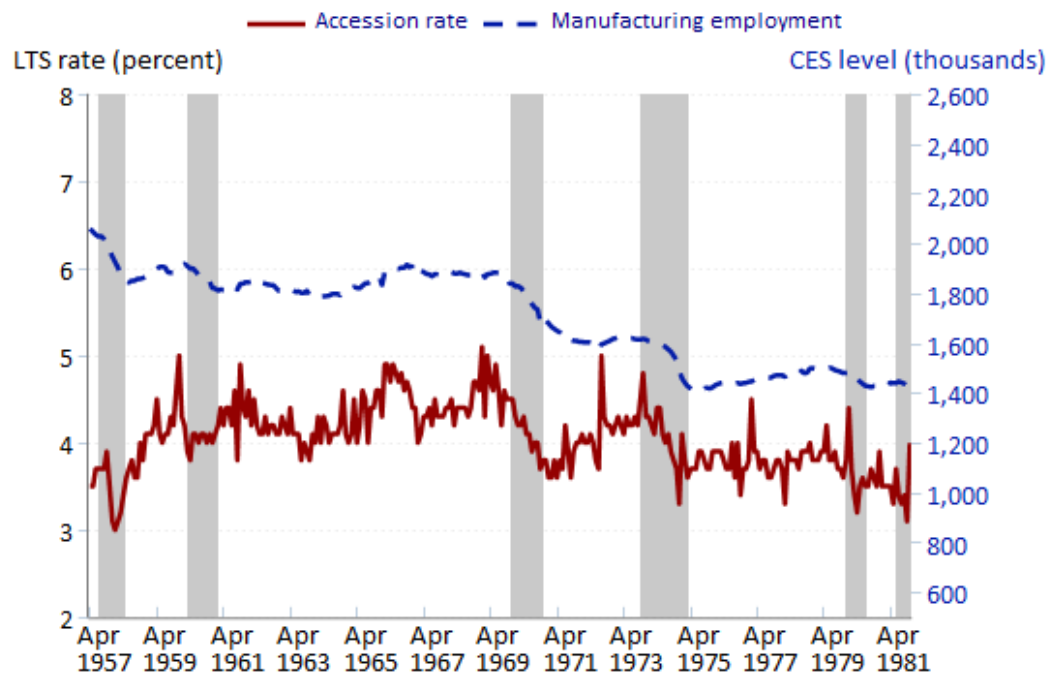
Note: Shaded areas denote recessions as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.



New York. New York manufacturing labor turnover data were analyzed from April 1957 to November 1981 for accessions, separations, quits, and layoffs. While the New York economy benefited greatly during WWII from increased industrial production, the post-WWII economy became more services oriented. Many companies left the state in search of a less expensive workforce and lower taxes. Between 1970 and 1980, the state population declined significantly.¹⁹ Manufacturing employment dropped from 31 percent of total nonagricultural employment in 1960 to 20 percent in 1980.²⁰

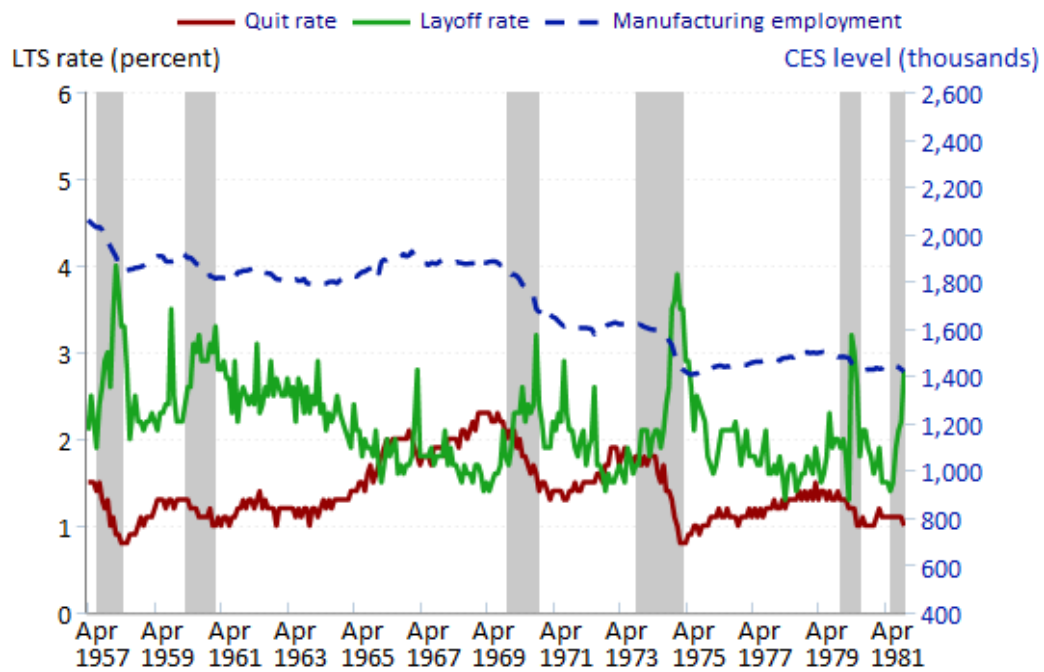
New York CES manufacturing employment levels declined steadily over the time series, resulting in a lower employment level at the end of the series than at the beginning. The accession rate generally declined prior to the onset of recessions. The accession rate peaked at 5.1 in January 1969, declined to 3.6 in January 1971, and then recovered before the next recession that began in November 1973. This pattern was repeated with the subsequent recession. After the peak in January 1969, accession rates never recovered previous levels. From the beginning of the series to a peak in early 1969, the quit rate increased steadily. From early 1969 through the end of the series, the quit rate fluctuated with recessionary periods but ultimately ended with a lower level at the end of the series. The quit rate began to decline prior to the onset of the recessions, recovering in the interim expansions. The layoff rate increased late in each recession covered by the New York series. A large spike occurred in the separation rate during the November 1973 to March 1975 recession driven by a corresponding spike in the layoff rate component. (See figures 7–9 on New York accession, quit and layoff, and separation rates, respectively.)

Figure 7. New York CES manufacturing employment vs. LTS accession rate, seasonally adjusted

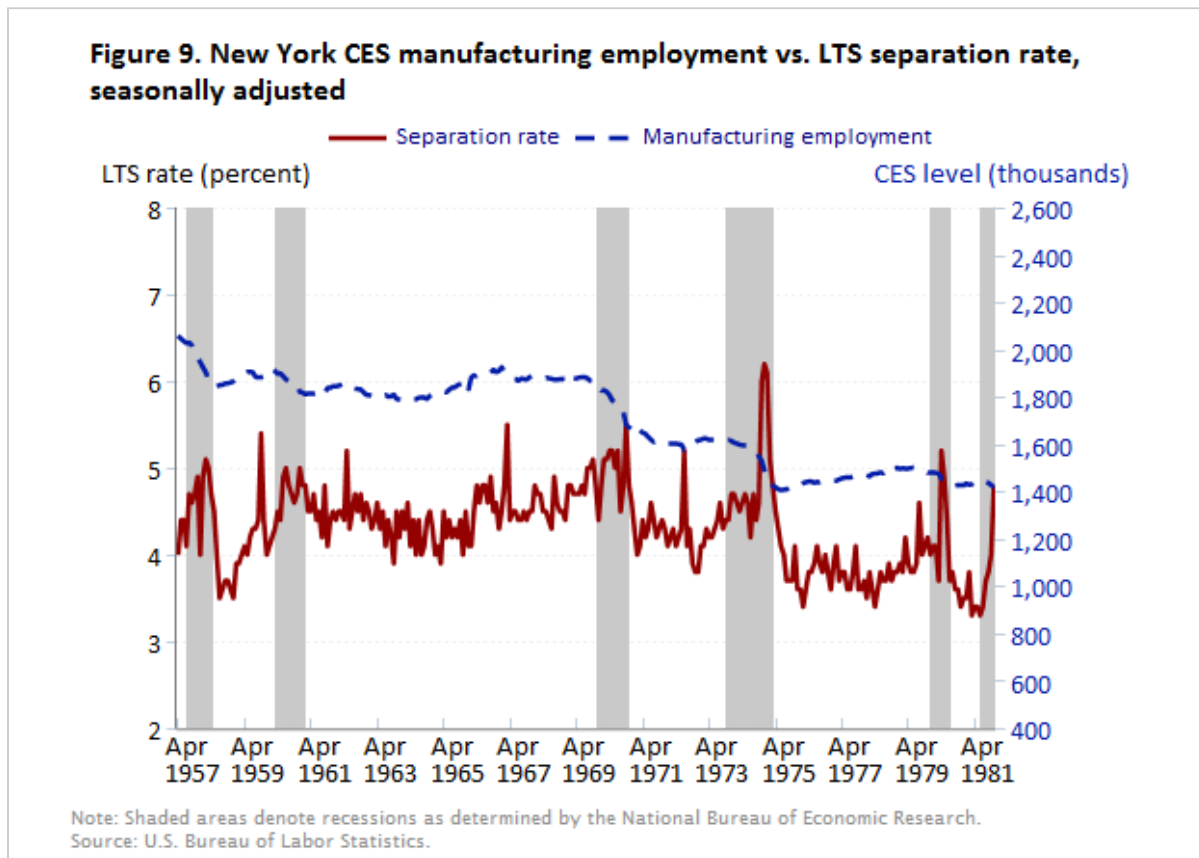


Note: Shaded areas denote recessions as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

Figure 8. New York CES manufacturing employment vs. LTS quit and layoff rates, seasonally adjusted



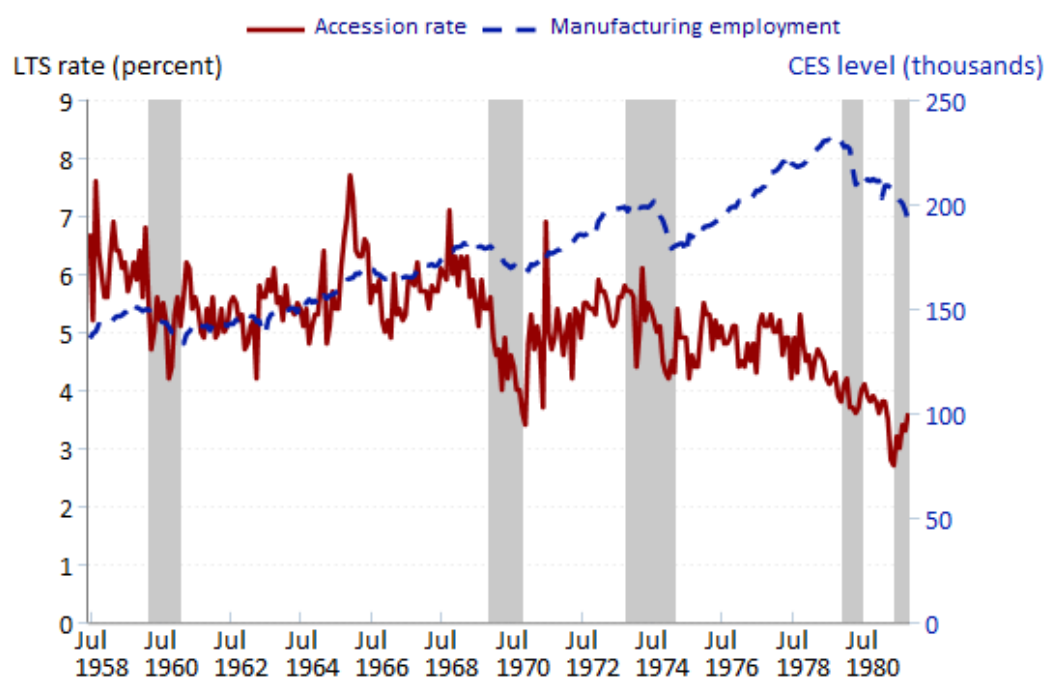
Note: Shaded areas denote recessions as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.



Oregon. Data from July 1958 to November 1981 were examined for Oregon. Following WWII, Oregon experienced population growth and economic growth in several industries including logging, forest products manufacture, agriculture, and tourism. The state also benefited from the influx of federal funds for the development of dams and other major construction projects, increasing the number of available jobs. At the same time, however, the salmon industry steadily declined.²¹

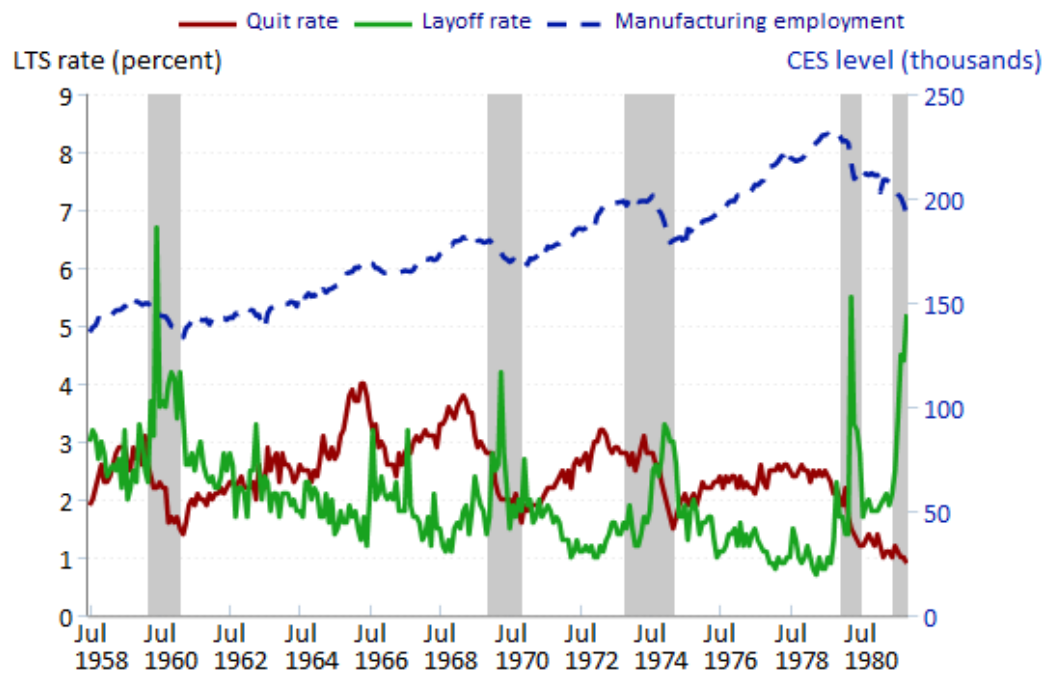
During the available time series, the Oregon CES employment level steadily increased. Prior to the onset of each of the four recessions covered by the series, the accession rate declined. The accession rate dropped from a high of 7.1 in October 1968, prior to the December 1969 to November 1970 recession, to 3.4 percent after the recession in December 1970. After this recession, the accession rate did not maintain previous levels for the remaining time series. The quit rate showed a countercyclical pattern with respect to the layoff rate. The quit rate increased during expansions and decreased during contractions, while the layoff rate decreased during expansions and increased during contractions. The exception to this pattern occurs toward the end of the series during the July 1980 and July 1981 expansion in which the quit rate continued to trend downward. The layoff rate spiked during each of the four recessions within the Oregon series. Large increases in the Oregon separation rate occurred coincident with all recessions covered. (See figures 10–12 on Oregon accession, quit and layoff, and separation rates, respectively.)

Figure 10. Oregon CES manufacturing employment vs. LTS accession rate, seasonally adjusted



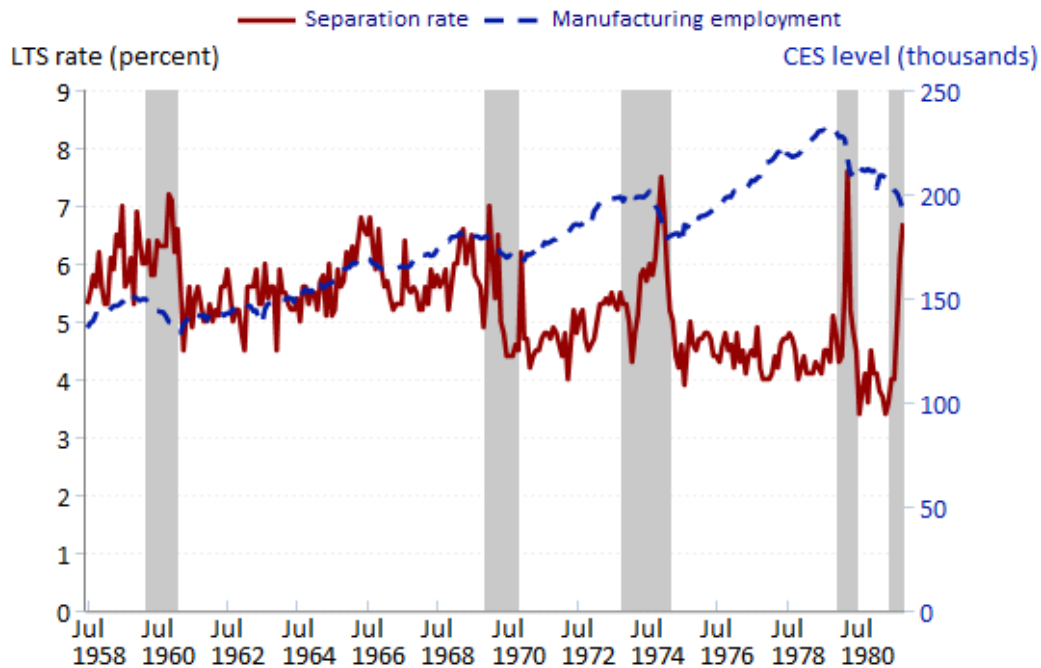
Note: Shaded areas denote recessions as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

Figure 11. Oregon CES manufacturing employment vs. LTS quit and layoff rates, seasonally adjusted



Note: Shaded areas denote recessions as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

Figure 12. Oregon CES manufacturing employment vs. LTS separation rate, seasonally adjusted

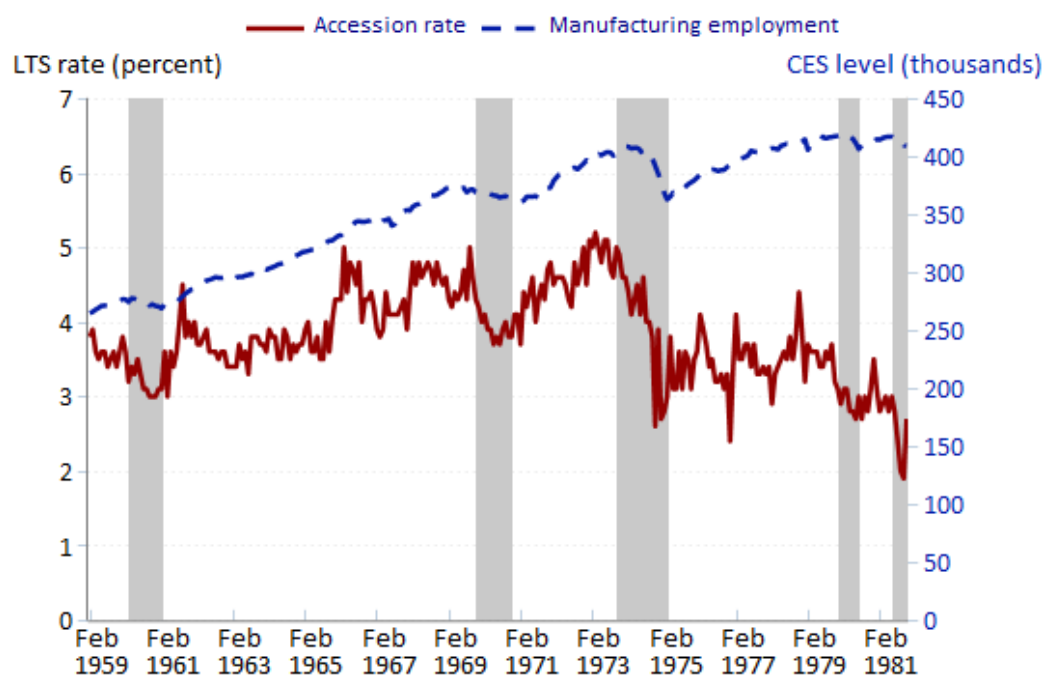


Note: Shaded areas denote recessions as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

Virginia. Virginia manufacturing data were examined from February 1959 to November 1981 for accessions, separations, quits, and layoffs. Virginia experienced steady postwar economic growth because of the presence of the federal government, including the military and the space program. Interstate highway systems improved transportation to the state's coast and through the north-south corridor. The tobacco industry experienced a gradual decline.²²

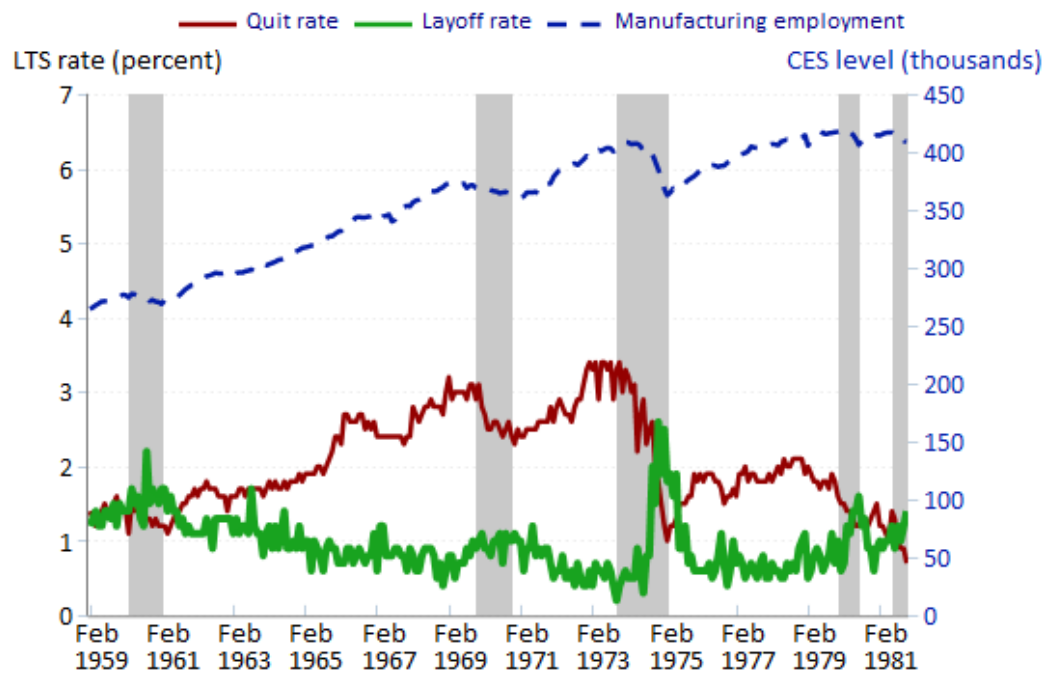
CES employment levels in Virginia trended up over the available time series. The accession rate trended upward through September 1969, reaching 5.0 percent. It then declined to 3.7 percent in July 1970 during the December 1969 to November 1970 recession. In March 1973, the accession rate peaked at 5.2 and then declined to 2.6 percent in November 1974. The quit rate and the layoff rate diverged from the beginning of the series through November 1974. In December 1974, the layoff rate exceeded the quit rate for the first time in almost 13 years. The response of both series to the November 1973 to March 1975 recession was dramatic: the quit rate dropped sharply and the layoff rate increased sharply. Neither series recovered previous levels before the end of the available time series. (See figures 13–15 on Virginia accession, quit and layoff, and separation rates, respectively.)

Figure 13. Virginia CES manufacturing employment vs. LTS accession rate, seasonally adjusted



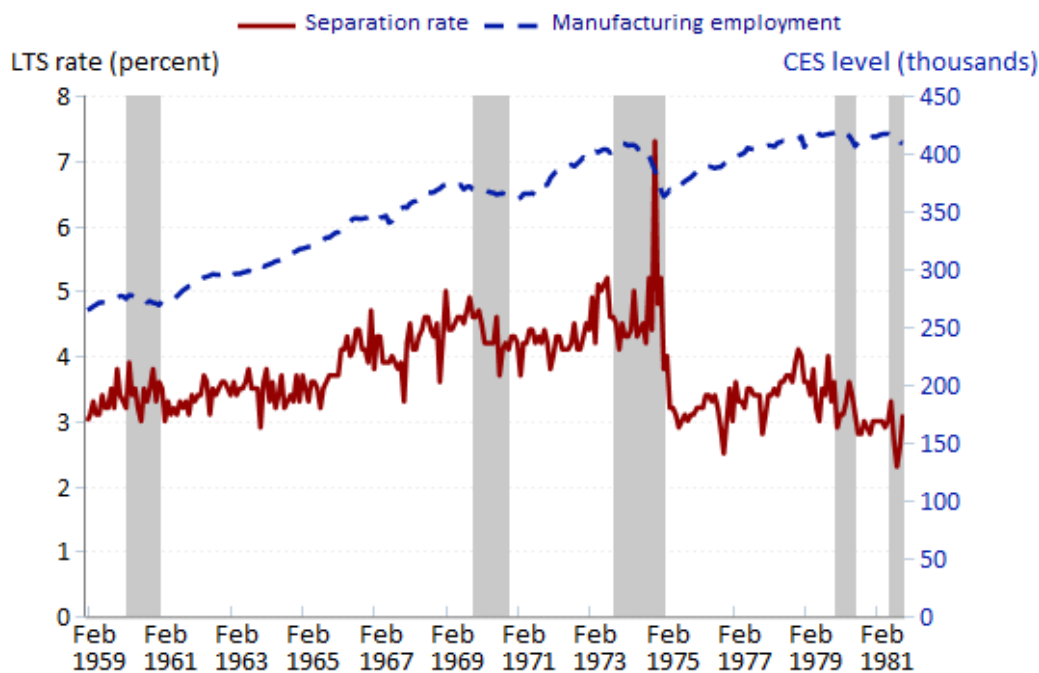
Note: Shaded areas denote recessions as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

Figure 14. Virginia CES manufacturing employment vs. LTS quit and layoff rates, seasonally adjusted



Note: Shaded areas denote recessions as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

Figure 15. Virginia CES manufacturing employment vs. LTS separation rate, seasonally adjusted



Note: Shaded areas denote recessions as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

LTS vs. JOLTS: similarities and differences

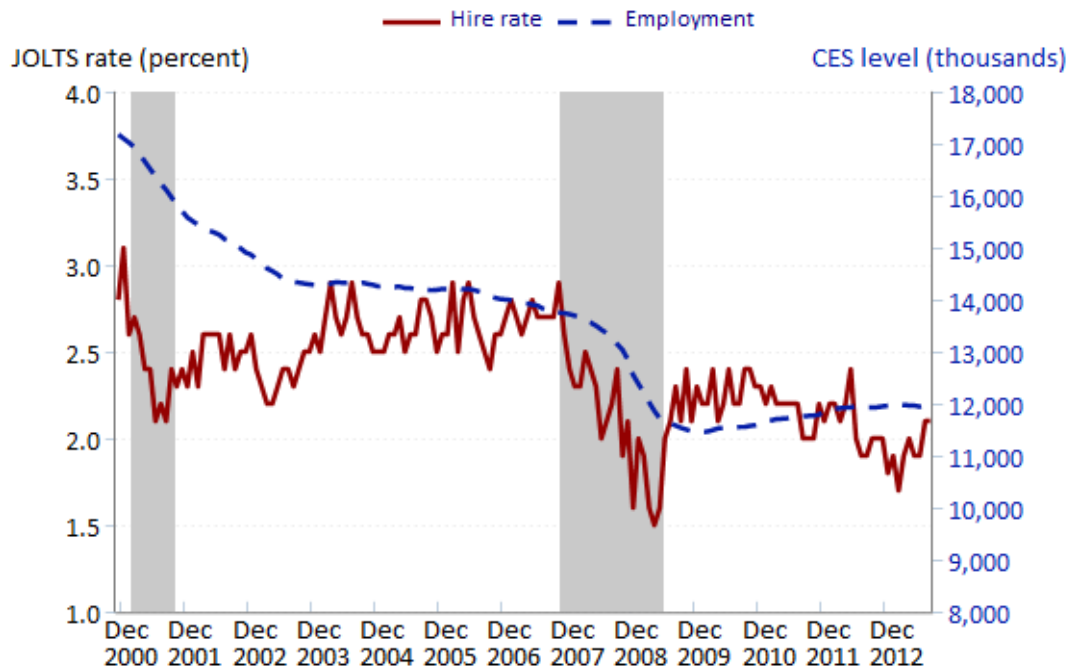
Although the LTS had a sample of 40,000 establishments, JOLTS has a smaller sample of approximately 16,000 establishments. Because of improvements in statistical techniques, JOLTS can provide broad industry coverage at the 2-digit NAICS level, covering all nonagricultural establishments, including services and government. The LTS data were collected for the manufacturing, mining, and telephone communication industries on the basis of the SIC structure. Detail was available in many cases to the 4-digit level. The LTS published data for the United States as a whole, for states, and for some MSAs. The JOLTS data are available for the United States as a whole and for Census Bureau regions. State data are not available.²³

Category	LTS	JOLTS
Scope	Manufacturing, mining, and telephone communications only	Nonagricultural establishments, including manufacturing, services, and government
Sample size	40,000 establishments	16,000 establishments
Geographic detail	Total United States, states, and various MSAs	Total U.S. and U.S. Census Bureau regions
Collection level	Federal-state	National

Time series	Between 1957 and 1981, depending on state	13 years, December 2000 onward
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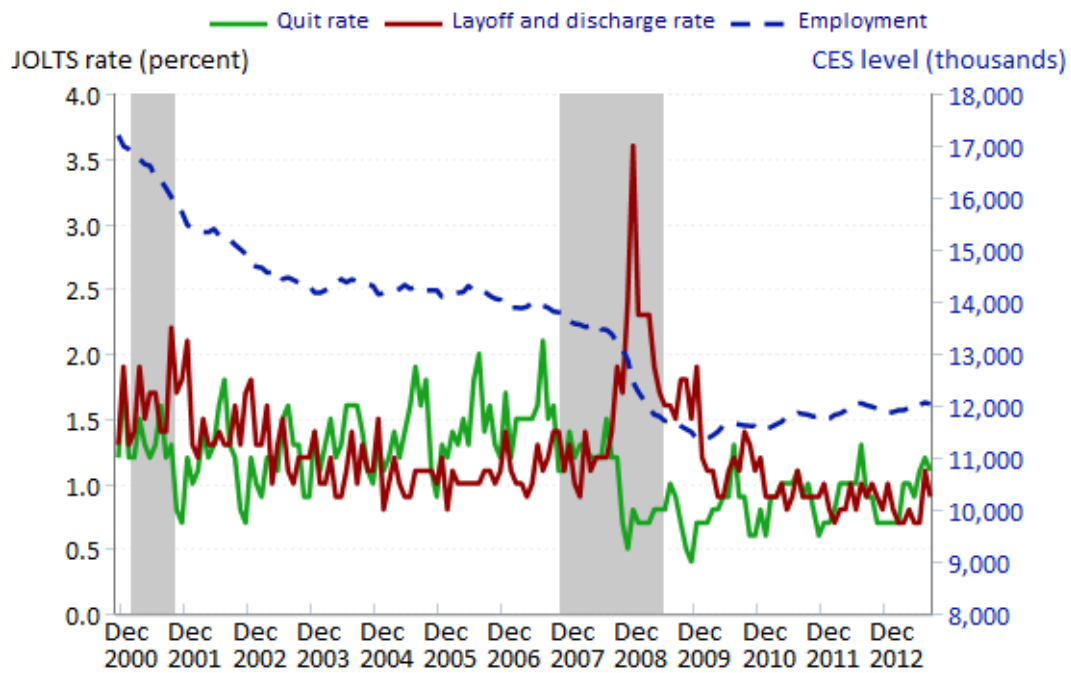
Patterns similar to those experienced in the LTS state data series examined can be observed in the current JOLTS data series for accessions (hires) and separations. For example, in the historical LTS series, both accessions and quits tend to decline prior to the start of recessions. This pattern has been observed in the current JOLTS hires and quits data for the most recent recession from December 2007 through June 2009. Layoffs data frequently peaked during the latter part of recessions in the LTS data series. This pattern can also be observed in the current national JOLTS data. See figures 16–18 on national JOLTS hires, layoffs and discharges versus quits, and total separations, respectively.

Figure 16. JOLTS hire rate vs. CES employment level, manufacturing, seasonally adjusted

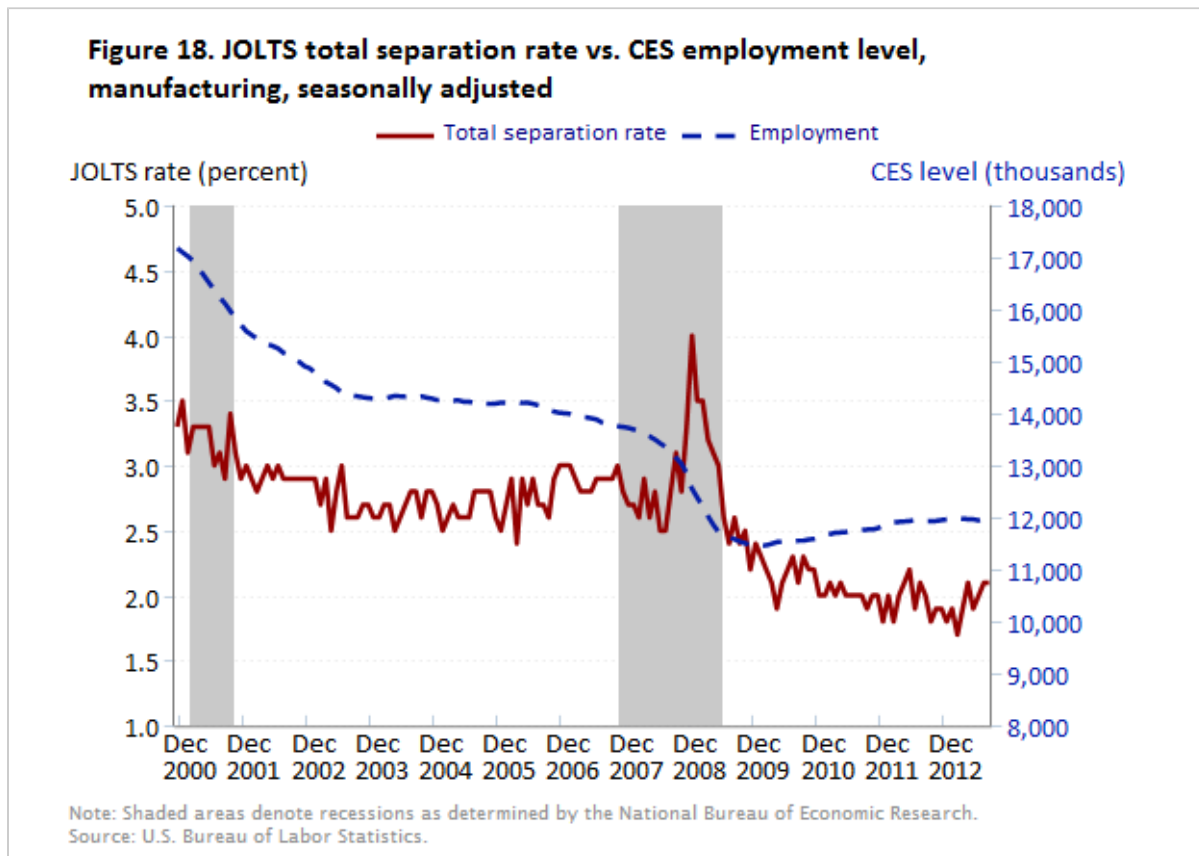


Note: Shaded areas denote recessions as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

Figure 17. JOLTS quit rate and layoff and discharge rates vs. CES employment level, manufacturing, not seasonally adjusted



Note: Shaded areas denote recessions as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.



THIS ARTICLE EXAMINES SELECT STATES and data elements for the LTS for the years that data are available and profiles economic features of the state-level data both from the business cycle perspective and for specific economic events in those states. It also discusses the differences in definitions and methodology between the LTS and the JOLTS programs.

Notes

¹ Carol M. Utter, "Labor turnover in manufacturing: the survey in retrospect," *Monthly Labor Review* (June 1982), p. 15–17, <http://www.bls.gov/opub/mlr/1982/06/art3full.pdf>.

² Ibid.

³ Monthly labor turnover rates in manufacturing for selected states and areas were initially published in the August 1957 edition. See *Employment and Earnings* 4, no. 2 (U.S. Bureau of Labor Statistics, August 1957), p. 32, <http://fraser.stlouisfed.org/publication/?pid=60>.

⁴ *Employment and Earnings* 29, no. 1 (U.S. Bureau of Labor Statistics, January 1982), p. 1, http://fraser.stlouisfed.org/docs/publications/employment/1980s/empl_011982.pdf.

⁵ The U.S. Census Bureau published the National Bureau of Economic Research data from 1959 through October 1968 in the *Business Cycle Developments* monthly report, <http://fraser.stlouisfed.org/publication/?pid=42>. In 1968, the

report was renamed the *Business Conditions Digest*. Beginning in 1972, the publication was produced by the Bureau of Economic Analysis; see <http://fraser.stlouisfed.org/publication/?pid=43>.

⁶ Utter, "Labor turnover in manufacturing," p. 16, <http://www.bls.gov/opub/mlr/1982/06/art3full.pdf>.

⁷ *BLS Handbook of Methods for Surveys and Studies*, Bulletin 1910, "Labor Turnover" (U.S. Bureau of Labor Statistics, 1976), Chapter 4, p. 48, http://catalog.gpo.gov/F/REP4N96S6BDPJ34BTX4F2CJI7E3FNEEQ2YUQI546AK36APJCSY-01692?func=full-set-set&set_number=004856&set_entry=000007&format=999.

⁸ *Employment and Earnings* 29, no. 1 (U.S. Bureau of Labor Statistics, January 1982), p. 216, http://fraser.stlouisfed.org/docs/publications/employment/1980s/empl_011982.pdf. Note: Mining and communications were categorized as nonmanufacturing industries. These data were not published at the state level but at the topside level by industry.

⁹ *Ibid.*, p. 212–213.

¹⁰ *Ibid.*, p. 214–215.

¹¹ *Ibid.*, p. 214.

¹² *Ibid.*, p. 217.

¹³ *Ibid.*, p. 214.

¹⁴ Todd A. Knoop, *Recessions and Depressions: Understanding Business Cycles*, 2nd ed. (Santa Barbara, CA: Praeger ABC-CLIO, 2010), Chapter 12.

¹⁵ For example, See "World War II and the Post-war 'Boom,'" <http://www.flheritage.com/facts/history/summary/index.cfm>.

¹⁶ Manufacturing percentages of total nonagricultural employment were derived by using data published in the *Employment and Earnings* publications for the respective years cited.

¹⁷ *Ibid.*

¹⁸ For more information on Michigan, see http://en.wikipedia.org/wiki/History_of_Michigan#After_1941.

¹⁹ For more information on New York history, see Peter R. Eisenstadt and Laura-Eve Moss, eds., *The Encyclopedia of New York State* (Syracuse, NY: Syracuse University Press), p. xxvi–xxvii, <http://books.google.com/books?id=tmHEm5ohoCUC&pg=PP31&dq=population+isbn:081560808X&hl=en&sa=X&ei=veiPUqOMCMS72AXpn4DoBg&ved=0CC8Q6AEwAA#v=onepage&q=population%20isbn%3A081560808X&f=false>.

²⁰ Manufacturing percentages of total nonagricultural employment were derived by using data published in the *Employment and Earnings* publications for the respective years cited.

²¹ For more information on Oregon, see <http://www.bluebook.state.or.us/cultural/history/history27.htm>.

²² For more information on Virginia, see http://en.wikipedia.org/wiki/History_of_Virginia#WWII_and_Modern_era.

²³ For more information on JOLTS, see the *BLS Handbook of Methods* (U.S. Bureau of Labor Statistics, last modified July 10, 2013), Chapter 18, "Job Openings and Labor Turnover Survey."

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